

REMARKS

Applicants thank the Examiner for total consideration given the present application. Claims 1-20 are currently pending. Claims 1 and 13 are independent. Claims 1, 2, 7, 9-14, and 19 have been amended through this Reply. Applicants respectfully request reconsideration of the rejected claims in light of the amendment and remarks presented herein, and earnestly seek timely allowance of all pending claims.

ALLOWABLE SUBJECT MATTER

Applicants appreciate that claim 12 is indicated to define allowable subject matter.

CLAIM OBJECTION

Claim 1 is objected to for minor informalities. This claim has been amended to address this issue. Accordingly, it is respectfully requested to withdraw this objection.

Claims 10 and 11 are objected to under 37 CFR 1.75 as allegedly being a substantial duplicate of claim 9 and 12, respectively. Although Applicants do not necessarily agree with the Examiner, claims 9-12 have been amended through this Reply to address this issue. More specifically, amended claims 9 and 10 recite both of the “mean preserving interpolation calculation circuits” and “adjacent pixel mean interpolation calculation circuit”. On the other hand, amended claims 11 and 12 recite the “mean preserving interpolation calculation circuits,” but not “adjacent pixel mean interpolation calculation circuit.”

Accordingly, it is respectfully requested to withdraw the objection to claims 9-12.

35 U.S.C. § 112, 2ND PARAGRAPH REJECTION

Claims 7-12 stand rejected under 35 U.S.C. 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Although Applicants do not necessarily agree with the Examiner's assertion of indefiniteness, Applicants have amended claim 7 to depend from claim 5 to address this issue.

Applicants respectfully request that the Section 112, second paragraph rejection of claims 7-12 be withdrawn.

35 U.S.C. § 102 REJECTION – Chen

Claims 1 stands rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Chen (USPN 6,570,616) (“Chen”). Applicants respectfully traverse this rejection.

For a Section 102 rejection to be proper, the cited reference must teach or suggest each and every claimed element. *See M.P.E.P. 2131; M.P.E.P. 706.02*. Thus, if the cited reference fails to teach or suggest one or more elements, then the rejection is improper and must be withdrawn.

In this instance, Chen fails to teach or suggest each and every claimed element. For example, amended independent claim 1 recites a mean preserving interpolation calculation circuit that obtains interpolation data for a missing pixel such that a mean value of a sequence of pixels constituting a group of pixels including the missing pixel is equal to a mean value of another sequence of pixels constituting a group of pixels not including the missing pixel, wherein the number of pixels constituting the group of pixels including the missing pixel and the number of pixels constituting the group of pixels not including the missing pixel are both k (k being a positive integer). *Emphasis added*.

Chen is directed to an interpolation device and method which does not include a “mean preserving interpolation calculation circuit” as claimed by the instant invention. Rather, Chen discloses an interpolation device and method in which the value of one of primary reference pixels of a color component located at positions adjacent to a target position at the top and bottom of the target position or at the left and right of the target position is compared to individual values respectively of secondary reference pixels of the color component located in the vicinity of the primary reference pixel. Then, determines whether an image edge component exists based on comparison of the value of the one of the primary reference pixels and the individual values of the secondary reference pixels. Finally, when the image edge component is determined to exist, performing a predetermined image processing on the image in consideration of the existing edge component is performed. (*See col. 2, lines 36-61; claims 1 and 2.*)

Chen is distinguished from the claimed invention in that Chen's interpolation calculation does not obtain interpolation data for a missing pixel (e.g., G33 as shown in Fig. 6) such that a mean value of a sequence of pixels constituting a group of pixels including the missing pixel is equal to a mean value of another sequence of pixels constituting a group of pixels not including the missing pixel, wherein the number of pixels constituting the group of pixels including the missing pixel and the number of pixels constituting the group of pixels not including the missing pixel are both k (k being a positive integer) as recited in claim 1. Conversely, Chen discloses three different calculations none of which shows the above-noted feature.

In the first calculation method of Chen, missing pixel G33 is interpolated by averaging the sum of pixel values of G23, G43, G32, and G34 when edges are not detected. Note that this group of pixels involves only 4 pixels and does not include the missing pixel G33. Chen fails to disclose another group of pixels that includes the missing pixel G33, but the number of pixels being 4. In other words, Chen fails to teach an interpolation calculation by averaging the sum of pixel values of G23, G43, G32, and G33; or G23, G43, G33, and G34; or G23, G33, G32, and G34; or G33, G43, G32, and G34. Thus, it is respectfully submitted that Chen cannot teach or suggest an interpolation calculation circuit that obtains interpolation data for a missing pixel such that a mean value of a sequence of pixels constituting a group of pixels including the missing pixel is equal to a mean value of another sequence of pixels constituting a group of pixels not including the missing pixel as recited in claim 1.

In the second calculation method of Chen, missing pixel G33 is interpolated by averaging the sum of pixel values of G23 and G43 when vertical edges are detected.

Finally, in the third calculation method of Chen, missing pixel G33 is interpolated by averaging the sum of pixel values of G32 and G34 when horizontal edges are detected.

Again, note that the group of pixels in the second and third calculation method of Chen involves only 2 pixels and does not include the missing pixel G33. Thus, Chen again fails to disclose another group of pixels that includes the missing pixel G33, but the number of pixels being 2. In other words, Chen fails to teach an interpolation calculation by averaging the sum of pixel values of G23, G33; or G33, G43; or G32, G33; or G33, G34.

Conversely, Chen may only suggest calculation of a mean value of sequence of pixels constituting a group of pixels not including the missing pixel G33.

Therefore, for at least the above reasons, it is respectfully submitted that Chen cannot teach or suggest an interpolation calculation circuit that obtains interpolation data for a missing pixel such that a mean value of a sequence of pixels constituting a group of pixels including the missing pixel is equal to a mean value of another sequence of pixels constituting a group of pixels not including the missing pixel, wherein the number of pixels constituting the group of pixels including the missing pixel and the number of pixels constituting the group of pixels not including the missing pixel are both k (k being a positive integer) as recited in claim 1.

Thus, it is respectfully submitted that independent claim 1 is distinguishable from Chen.

Accordingly, Applicants submit that the anticipation rejection of claim 1, based on Chen be withdrawn.

35 U.S.C. § 103 REJECTION – Chen, Lin, Sasaki

Claim 2-6 and 13-18 are rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Chen in view of Lin et al. (U.S. Patent Publication No. 2004/0208384)[hereinafter “Lin”].

Claims 7-9, 11 and 19-20 are rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Chen in view of Lin and in further view of Sasaki et al (U.S. Patent No. 7,206,021)[hereinafter “Sasaki”]. Claims 10 and 11 have been cancelled via this Reply rendering the rejection of these claims as moot.

Applicants respectfully traverse these rejections.

Similar to independent claim 1, independent claim 13 also recites, *inter alia*, “obtains interpolation data for a missing pixel such that a mean value of a sequence of pixels constituting a group of pixels including the missing pixel is equal to a mean value of another sequence of pixels constituting a group of pixels not including the missing pixel, wherein the number of pixels constituting the group of pixels including the missing pixel and the number of pixels constituting the group of pixels not including the missing pixel are both k (k being a positive

integer).” As demonstrated above in great detail, the primary reference Chen fails to teach or suggest the above-noted feature of claim 13.

Lin and Sasaki have not been, and indeed cannot be, relied upon to fulfill the above-noted deficiency of claim 13.

Claim 13 is distinguishable from the applied prior art references.

Dependent claims 2-9 and 14-20 are distinguishable from the applied prior art references at least by virtue of their dependency on corresponding independent claim.

Accordingly, Applicants submit that the obviousness rejection of claims 2-9 and 13-20 be withdrawn.

CONCLUSION

All rejections raised in the Office Action having been addressed, it is respectfully submitted that the present application is in condition for allowance. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claims does not necessarily signify concession of unpatentability of the claim prior to its amendment.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Ali M. Imam Reg. No. 58,755 at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

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If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

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